IN THE CLAIMS:

Please amend claim 1 as follows. The following listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended). A method for acquiring a three-dimensional image data set of a moving organ of a body of a patient, comprising the steps of:

defining a plurality of different X-ray positions of an X-ray device including an X-ray source and an X-ray detector required to obtain the three-dimensional image data set, the X-ray positions being situated in a common plane,

defining an X-ray cycle in which all of the X-ray positions are successively occupied,

detecting a motion signal related to periodic motion of the organ which has a low-motion phase and a high-motion phase,

simultaneously with detection of the motion signal, successively moving the X-ray device to all of the X-ray positions in the X-ray cycle and acquiring a plurality of projection data sets required for formation of the three-dimensional image data set, each of the projection data sets

being acquired when the X-ray device is in a respective one of the X-ray positions,

successively completing a plurality of X-ray cycles,

controlling movement [[o f]] <u>of</u> the X-ray device and the acquisition of the projection data sets by the X-ray device by means of the motion signal such that a projection data set during the low-motion phase of the organ required for the formation of the three-dimensional image data set is acquired when the X-ray device is in each X-ray position, said step of controlling the movement of the X-ray device comprising the step of controlling a start of each of the X-ray cycles based on the motion signal to cause each X-ray cycle to commence at a different instant in the different phases of motion of the organ, and

using the projection data sets acquired during the low-motion phases for the formation of the three-dimensional image data set.

Claim 2 (Previously Presented). The method as claimed in claim 1, wherein only the projection data sets acquired during the same motion phases are selected and used.

Claim 3 (Cancelled).

Claim 4 (Previously Presented). The method as claimed in claim 1, wherein the X-ray device is controlled by means of the motion signal such that projection data sets are acquired only during low-motion phases of the organ.

Claim 5 (Previously Presented). The method as claimed in claim 1, wherein the X-ray device is controlled by means of the motion signal such that the X-ray source is switched on to acquire projection data sets exclusively during low-motion phases of the organ.

Claim 6 (Previously Presented). The method as claimed in claim 1, wherein a respiratory motion signal dependent on the patient's respiration is acquired as a motion signal.

Claim 7 (Previously Presented). The method as claimed in claim 1, wherein a cardiac motion signal dependent on the motion of the heart of the patient is acquired as the motion signal.

Claim 8 (Previously Presented). The method as claimed in claim 7, wherein in addition to the cardiac motion signal, a

respiratory motion signal dependent on respiratory motion is acquired, further comprising using the respiratory motion signal to ensure that only projection data sets acquired during the same respiratory motion phases are used to form the three-dimensional image data set.

Claim 9 (Previously Presented). The method as claimed in claim 8, wherein the respiratory motion signal is used to correct, during the formation of the three-dimensional image data set, the projection data sets acquired in different respiratory motion phases and the shifts in position of the organ resulting therefrom.

Claim 10 (Previously Presented). The method as claimed in claim 6, further comprising informing the patient that a desired respiratory motion phase has been reached based on the respiratory motion signal.

Claims 11-17 (Cancelled).

Claim 18 (Previously Presented). A method for acquiring a three-dimensional image data set of a moving organ of a body of a

patient, comprising the steps of:

defining a plurality of different X-ray positions of an X-ray device including an X-ray source and an X-ray detector, the X-ray positions being situated in a common plane;

detecting a motion signal related to periodic motion of the organ which has a low-motion phase;

simultaneously with detection of the motion signal, moving the X-ray device to each of the X-ray positions and when the X-ray device is in each of the X-ray positions, determining whether a low-motion phase of the organ is present by monitoring the motion signal and

when a low-motion phase of the organ is present, acquiring a projection data set and

when a low-motion phase of the organ is not present, maintaining the X-ray device in the X-ray position and continuously determining whether the low-motion phase is present until a positive determination is obtained and thereafter acquiring a projection data set;

continuing movement of the X-ray device to all of the X-ray positions until a projection data set is acquired when the X-ray device is in each of the X-ray positions while a low motion phase of the organ is present; and

using the projection data sets acquired during the low-motion phases for formation of the three-dimensional image data set.

Claim 19 (Canceled).

Claim 20 (Previously Presented). The method of claim 18, further comprising the steps of:

correlating presence of the X-ray device in each of the X-ray positions and the acquisition of the projection data sets based on the motion signal such that the X-ray device is present in a new X-ray position at a fixed instant within a given phase of motion; and then

acquiring at the same time a correction data set so that all projection data sets are acquired at the same instant within a phase of motion.

Claim 21 (Previously Presented). The method of claim 18, further comprising the steps of:

defining a sequence of the X-ray positions; and

moving the X-ray device successively through each of the X-ray positions in the defined sequence of X-ray positions.

Claim 22 (Previously Presented). The method as claimed in claim 1, further comprising the step of defining the X-ray positions on a semi-circular arc.

Claim 23 (Previously Presented). The method as claimed in claim 22, wherein the X-ray positions are set positions along the semi-circular arc.

Claim 24 (Previously Presented). The method as claimed in claim 1, wherein the organ is a heart, the start of the X-ray cycles being controlled such that each X-ray cycle commences at a different instant within a cardiac cycle.

Claim 25 (Previously Presented). The method as claimed in claim 1, wherein the X-ray positions in each X-ray cycle include an initial X-ray position and a final X-ray position, further comprising the steps of:

beginning each X-ray cycle with the X-ray device in the initial X-ray position;

ending each X-ray cycle with the X-ray device in the final X-ray position; and then

moving the X-ray device from the final X-ray position back to the initial X-ray position to begin a subsequent X-ray cycle.

Claim 26 (Previously Presented). The method as claimed in claim 25, wherein the X-ray device is moved from the final X-ray position to the initial X-ray position in a time interval which allows the subsequent X-ray cycle to commence at a different phase of motion of the organ.

Claim 27 (Previously Presented). The method as claimed in claim 25, further comprising the step of defining the X-ray positions on a semi-circular arc with the initial X-ray position being opposite the final X-ray position on the semi-circular arc.

Claim 28 (Previously Presented). The method as claimed in claim 1, wherein a time interval is provided between consecutive X-ray cycles to enable the X-ray device to return to an initial X-ray position in the X-ray cycle from a final X-ray position in the X-ray cycle.